Catholic Memorial HIGH SCHOOL

Year Long Course Plan

Department: Science **Course:** Biology 722/723

Essential Learning Outcomes: After successfully completing this course, students will be able to:

1. Utilize examples to show how scientific method and explanations are used in real-life decisions.
2. Discuss basic and applied research to show how cultures and individuals have contributed to the development of major ideas in the earth and space, life and environmental, and physical sciences.
3. Identify issues from an area of science study, design and carry out an investigation to collect and analyze data and formulate a conclusion.
4. Describe the normal structures and functions of cells in single-celled and multiple-celled organisms and understand how cells differentiate and how they are regulated.
5. Evaluate the relationships between functions of the cell and functions of the organism as related to genetics and heredity and apply these to specific/current issues in genetics.
6. Account for changes in species and the diversity of species using concepts of evolution and heredity
7. Explain how organisms both cooperate and compete in ecosystems and infer changes in ecosystems prompted by the introduction of new species, changes in environmental conditions, and air, water, or earth pollution.
8. Investigate how the complexity and organization of organisms accommodates the need for obtaining, transforming, transporting, releasing and eliminating the matter and energy used to sustain an organism.

Quarter 1	***Quarter 2***
Unit 1: Principles of Cell Biology (ELOs 1-4, and 8) • Themes of Biology • The chemical basis of life • The molecules of cells • Structures of the cell • Functions of cells • How cells harvest chemical energy	**Unit 2: Principles of Reproduction and Genetics (ELOs 1-6)** • Life begets life • Binary Fission • Mitosis • Meiosis • Cellular basis of inheritance • Patterns of inheritance • Molecular biology of the gene
Quarter 3	***Quarter 4***
Unit 3: Principles of Evolution (ELOs 1-3, 6 and 7) • The Theory of Evolution • How populations evolve • The Origin of Species **Unit 5: Survey of Biological Diversity (ELOs 1-3, 6 and 8)** • Prokaryotes • Fungi • Plants • Animals	**Unit 6: Animals Form and Function (ELOs 1-3, 6-8)** • Evolving Body Plans **Unit 7: Plants Form and Function (ELOs 1-3, 6-8)** • Evolving Plant Structures **Unit 4: Ecology (ELOs 1-3, 6-8)** • Nutrient Cycles • Food Webs • Invasive Species

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